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WHAT IS CLAIMED IS:

1. A magnetic bearing apparatus of a control type, having a supporting electromagnet capable of generating a magnetic force to support a supported member without contact by the magnetic force generated by supplying a control current to a coil of the electromagnet from a power amplifier, said apparatus comprising:

a current sensor for detecting the control current output from said power amplifier;

a displacement sensor for detecting a displacement of said support member; and

a magnetic flux or a magnetic flux density estimating means which receives at least a control current detection signal of said current sensor and a displacement detection signal of said displacement sensor for estimating a magnetic flux or a magnetic flux density generated between a surface of said electromagnet and the electromagnetic target on said supported member, wherein an estimated value from said estimating means is fed back to said power amplifier.

2. A magnetic bearing apparatus according to claim 1, wherein the control current detection signal of said current sensor is fed back to said power amplifier.

3. A magnetic bearing apparatus according to claim 1, further comprising a voltage sensor for detecting a coil voltage of said supporting electromagnet, a coil voltage detection signal of said voltage sensor being fed back to said power amplifier.

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